

**REMARKS**

Applicants respectfully request the Examiner to reconsider the present application in view of the foregoing amendments to the claims and the following remarks.

***Status of the Claims***

In the present Amendment, claim 1 has been amended. Claims 1-9, 11-15 and 17-26 are pending in the above-identified application.

Support for the amendment to claim 1 is found at least in the paragraph bridging pages 21-22 of the present specification. No new matter has been added.

Based upon the above considerations, entry of the present amendment is respectfully requested.

In view of the following remarks, Applicants respectfully request that the Examiner withdraw all rejections and allow the currently pending claims.

***Issues under 35 USC 103(a)***

Claims 1-4, 8-15 and 19-25 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tsukamoto '985 (JP 2000-143985) (see paragraph 4 of the current Office Action).

Also, claims 5-7, 17 and 18 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tsukamoto '985 in view of Hedaya '492 (U.S. Patent No. 4,208,492) (see paragraph 5 of the current Office Action).

The above-noted rejections are traversed based on the following reasons.

The present invention is directed to a black composition which includes a titanium nitride oxide component, which is photo-curable and which satisfies Equations (1)-(4), as recited in claim 1, for example. Applicants also respectfully refer the Examiner to the amendment to pending claim 1. With this amendment to claim 1, it is clearly defined that the black composition of the present invention in the form of a film specifically transmits i-ray. By virtue of this property, the black composition can be exposed at a low exposure energy (as recited in claim 1 now on file) ( $60 \text{ mJ/cm}^2$ ). Usually, if a black light shading agent is added, the transmittance of i-ray having the wavelength used for the exposure also decreases. As a result, to pattern the film by light becomes difficult, which is a problem in the art. However, and as unexpected in the art, by using the titanium nitride oxide as instantly defined in claim 1, the transmittance of i-ray is improved while maintaining the light shading property of the film. As a result, in addition to the high OD value and good adhesion, a resin black matrix having vertical edge portions may be obtained with the present invention (see also page 9, lines 9-10 of Applicants' specification).

Applicants note that claim 11 also recites the transmittance of i-ray of defined value.

The composition of the cited Tsukamoto '985 reference cannot satisfy the requirements as instantly recited in the claims, which include "the minimum exposure energy required for photo-curing is not more than  $60 \text{ mJ/cm}^2$ " and "the transmittance of i-ray through the resin black matrix is more than 0.2% when the OD value is 2.0" (see, e.g., claim 1). Further, Tsukamoto '985 fails to disclose or suggest the advantages achieved by the present invention, which include the above-mentioned surprising superior effect of the transmittance of i-ray is improved while

maintaining the light shading property of the film, because the composition of Tsukamoto '985 is not photo-sensitive.

In addition, Applicants maintain that these rejections are improper for reasons of record. For instance, the composition of Tsukamoto '985 does not satisfy Equations (3) and (4) as already discussed in response to the previous Office Action. Tsukamoto '985 further fails to disclose selecting an appropriate titanium nitride oxide component in order to satisfy Equations (3) and (4) for the black composition. Therefore, the present invention is not obvious over Tsukamoto '985 and the first rejection has been overcome.

Regarding the second rejection, Hedaya '492 does not account for the deficiencies of the primary reference. Regarding the comments in the Office Action at page 5, first full paragraph, Hedaya '492 does not even disclose the superior effect of the transmittance of i-ray is improved while maintaining the light shading property of the film as achieved by the present invention. Further, Hedaya '492 fails to disclose or suggest the required properties based on Equations (1)-(4) as recited in the present claims.

Applicants again emphasize that the presence of titanium nitride oxide (or "titanium black") as a light shading agent is somewhat surprising. One of ordinary skill in the art could predict that the presence of a light shading agent in such a composition would prevent it from photo-curing properly due to the failure of the photo-curing light to sufficiently penetrate the composition for the photo-curing reaction to properly proceed. However, as explained at page 19 of the present specification, the type of titanium used in the composition of the present invention apparently transmits ultraviolet light at a higher level than other shading agents, and

traps radicals generated by irradiation with light at a much lower level than other shading agents such that a larger amount of radicals is available to continue the photo-curing reaction. Tsukamoto '985 neither discloses nor suggests to one skilled in the art how to obtain such advantages as achieved by the present invention. Tsukamoto '985 does not even disclose the claimed transmittance of i-ray. The same problems are seen with Hedaya '492.

In any event, reconsideration of all previous remarks as well as the declaratory evidence is respectfully requested, especially how claim 1 recites "wherein the transmittance of i-ray through the resin black matrix is more than 0.2% when the OD value is 2.0". Withdrawal of both rejections is respectfully requested.

### **CONCLUSION**

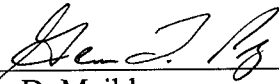
It is submitted for the reasons above that the present claims define patentable subject matter such that this application should now be placed in condition for allowance.

Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Andrew D. Meikle, Reg. No. 32,868, at the telephone number of the undersigned below, to conduct an interview in an effort to expedite prosecution in connection with the present application.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37.C.F.R. §§1.16 or 1.17; particularly, extension of time fees.

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Respectfully submitted,

By  #48,501

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